

# DOCUMENT RESUME

ED 244 527

HE 017 228

AUTHOR Spencer, Mark H.; Battison, Sara  
 TITLE Linking Interprofessional Education to Practice.  
 SPONS AGENCY Ohio State Univ., Columbus. Commission on  
 Interprofessional Education and Practice.  
 PUB DATE Apr 84  
 NOTE 42p.; Paper presented at the Annual Meeting of the  
 American Educational Research Association (New  
 Orleans, LA, April 23-27, 1984).  
 PUB TYPE Reports - Research/Technical (143) --  
 Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.  
 DESCRIPTORS \*College Graduates; \*Education Work Relationship;  
 Graduate Surveys; Higher Education;  
 \*Interdisciplinary Approach; \*Interprofessional  
 Relationship; \*Professional Education

## ABSTRACT

The impact of interprofessional education experiences at Ohio State University on the subsequent attitudes and practices of graduates in professional roles was studied. Interprofessional education may involve classroom lecture and simulated experiences, as well as field experiences. A second dimension of interprofessional education concerns the makeup of students and faculty. Questionnaires were administered to graduates who were practicing professionals to determine the influence of participation in interprofessional courses on: the attitudes, beliefs, and behavior of professionals regarding interprofessional education and practice. Attention was also directed to interprofessional education course objectives, including an understanding of the response of one's profession to current social and ethical issues, and an appreciation of the response of other professions to these issues. Interprofessional education experiences did not appear to affect beliefs; however, course participants demonstrated stronger agreement with a series of attitude statements regarding interprofessional education and practice. In addition, course participants more frequently responded that they had participated in interprofessional practice than did nonparticipants.  
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# LINKING INTERPROFESSIONAL EDUCATION TO PRACTICE

Mark H. Spencer  
Sara Battison

The Ohio State University

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Prepared for presentation to the Annual Meeting of  
the American Educational Research Association

New Orleans, April 23-27, 1984

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## LINKING INTERPROFESSIONAL EDUCATION TO PRACTICE

Interprofessional team practice has been identified as a response to both current social needs and current criticisms of the professions. Interprofessional education has been proposed, and in some instances initiated, as one means of preparing professionals for team practice. Before interprofessional education can be fully accepted, some functional relationship must be identified between interprofessional education and subsequent inclination or ability regarding interprofessional practice.

The Commission on Interprofessional Education and Practice at The Ohio State University is in its tenth year of coordinating courses offered on an interprofessional basis to students from seven professions - Allied Medical Professions, Education, Law, Medicine, Nursing, Social Work, and Theology.

A study was initiated in 1982 to assess the impact of these interprofessional educational experiences on the subsequent attitudes and practices of professionals. The specific objectives of the study were directly related to assessing the beliefs, attitudes, and behaviors of practicing

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The research reported in this paper was funded by the Commission on Interprofessional Education and Practice at The Ohio State University, which is supported in part by a grant from the W. K. Kellogg Foundation. Opinions expressed in the paper do not necessarily reflect the endorsement of the Commission or the Kellogg Foundation.

professionals regarding the topics of interprofessional education and practice.

### Interprofessional Education

Interprofessional education has evolved in part in response to the increased complexity of contemporary societies. Interprofessional education and interprofessional practice as developed thus far address the fact that more and more traditional professions are finding their competencies outstripped by the problems that people bring to them. Many of these problems are intricately interwoven--not singularly emotional, health, social, or psychological. Webs of complexity surround issues that in prior times were simpler and more likely to yield to the ministrations of a single professional such as the family doctor, the pastor, or the teacher. Baffling problems such as depression, child abuse, unemployment and alcoholism, might well make us yearn for days when an occasional ulcer, the common cold, or now and then a low grade on a report card were our most serious concerns (Cunningham, 1982).

Szasz (1974) provided a useful short definition of interprofessional education as "preparation of students for collaborative service relationships." The terms "health team education," "joint education," "human services team education," and "interprofessional education" have been used often relatively interchangeably. The term "interprofessional" has been used more broadly than the term "interdisciplinary" and has the breadth to include members of

different professions, especially ones outside the common health care disciplines.

Schein (1972) suggested three needed directions for professional education. The third direction was relevant to this study: "New curricular and new career paths which are inter or transdisciplinary and which may lead eventually to new professions that have new blends of knowledge and skills underlying them." He suggested three possible meanings for the term "interdisciplinary."

1. A curriculum that involves courses from two or more departments or disciplines leading to a degree named after one of them, or a degree "without specification."
2. A curriculum that involves several disciplines, all of which are located within a given school.
3. Schools that are from the outset interdisciplinary or transdisciplinary in their orientation in that they set as their goal the development of a new discipline that represents an integration of the disciplines represented (pp. 64-65).

Ducanis and Golin (1979) identified three elements within interprofessional team education:

1. Cognitive (primarily didactic) information, including organizational theory, small group dynamics, and the sociology of the professions;
2. Effective (and experiential) learning - by participating in a team the students learn through experience how a team operates, how roles are established, and how leadership emerges;
3. Clinical training - by participating as part of a team in assessment, treatment, and similar activities with the client, the student learns the application of clinical skills with other professionals (p. 157).

McCalley (1977) suggested four methods for achieving interprofessional education:

1. Mixing students of various professional disciplines in the same course and classroom;
2. Establishing a course dealing with interprofessional issues;
3. Mixing students in the clinical settings, particularly as members of primary health care teams;
4. Bringing together students, faculty members, and administrators of differing schools and disciplines in the planning of joint activities (p. 178).

While interprofessional education is not widespread, examples do exist. Experimental or continuing programs are reported at the Medical College of Virginia, The Division of Interdisciplinary Programs of the School of the Health Related Professions, University of Pittsburgh; Institute for Health Team Development at Montifore Hospital and Medical Center in New York City; Office of Interprofessional Education in the Health Services, University of British Columbia; Yale Medical School; Indiana University; University of California San Francisco; Johns Hopkins; University of Wisconsin; University of Nevada, Reno; Medical College of Georgia; Harvard University; Center for Interdisciplinary Education in Allied Health, College of Allied Health, University of Kentucky; Center for the Study of Ethics in the Professions, Illinois Institute of Technology; and Entry into the Educating Professions: An Interdisciplinary Doctoral and Postdoctoral Program, Teachers College Columbia University.

Evaluation has the smallest literature base of any component of interprofessional education. Most of the programs mentioned, including the one at The Ohio State University, have been amply described, but few have been evaluated beyond end-of-course type of assessment.

Interprofessional education at The Ohio State University has been the subject of several end-of-course evaluations. At the conclusion of each course students are asked to complete a course evaluation form. Faculty teams for each course also evaluate each course, and meet as a group to discuss results of student evaluations. Several graduate students have analyzed certain aspects of the courses as part of requirements for course in their major areas. For example, Alexander (1977) wrote a paper detailing historical antecedents of the formation of the Commission. Spencer (1981) discussed the interprofessional courses from a theory of organizations standpoint, using the metaphor of "loose couplings." A social work masters thesis (Siehl, 1978) studied the group dynamics of students in an interprofessional course. Siehl identified several conceptual variables--attitudes toward other professions, trust, and cooperation--and then measured movement in those variables by means of a pre and post questionnaire. Results indicated: 1) students in the groups were shown to become more trusting; 2) students' attitudes toward other professions became more favorable; and 3) student groups became more cohesive.

Interprofessional education can be described as two-dimensional. Teaching method: classroom lecture, classroom simulated experiences, and field experiences constitute one dimension. A second dimension encompasses various levels of interprofessional involvement, that is, the make-up of students and faculty. Using these two dimensions it is possible to delineate a matrix for interprofessional education. In

Figure 1

MATRIX FOR INTERPROFESSIONAL EDUCATION\*

Clinic/Field Team Practice with Client Contact (Skill Orientation)		(4) Inter- professional Practicum in Clinical Settings
Classroom: Team Practice with cases (Skill Orientation)		(3) Inter- professional Care
Classroom: Didactic Presentation: Team Involvement (Issue Emphasis)		(1) Changing Societal Values  (2) Ethical Issues

Faculty:  
Single  
Profession

Faculty: One  
Profession

Faculty:  
Multiple  
Profession

Students:  
Single  
Profession

Students:  
Multiple  
Profession

Students:  
Multiple  
Profession

OR

Faculty:  
Multiple  
Profession

Students: One  
Profession

\*Interprofessional courses at The Ohio State University

- (1) Changing Societal Values and the Professions
- (2) Seminar on Ethical Issues Common to the Helping Professions
- (3) Seminar on Interprofessional Care
- (4) Interprofessional Practicum on Clinical Settings

Figure 1, the four courses coordinated by The Ohio State University's Commission on Interprofessional Education and Practice are classified using the matrix.

### Methodology

The nature of the study dictated ex post facto design. This design was required because the researcher had no input into the experiential intervention, the course experience, but did have some input into the nature of the after-the-fact assessment. The study called for measurements on two closely-matched groups, one of which received some treatment. The design was introduced by Chapin (1947) and was classified by Campbell and Stanley (1963) as "Static Group Comparison."

The design contained a selection threat to internal validity because those who took Commission-facilitated courses self-selected themselves as participants. In most cases the course was taken as an elective. There was therefore the possibility that participation in the course was related to previously held values or attitudes, rather than participation influencing post-course values or attitudes. This threat was minimized by matching the two groups on demographic variables prior to the survey, and by including demographic variables on the survey for additional comparison.

One focus of the study was on assessment of attitudes held by professionals toward interprofessional activities. An attitude has been defined as an expression, by word or deed, of an individual's reaction toward or feeling about a person, a thing, or a situation. Horrocks (1964) indicated

that attitudes result from the impact of the environment, past or present, acting upon the personality (as developed to that point) of an individual. Attitudes are typically measured by having an examinee express or react to opinions, choose between contrasting statements or stimulus objects, or react overtly when presented with various other standard test situations.

The questionnaire has served as the main instrument for the collection of research data on attitudes. Horrocks identified six types of questionnaires: preference, stereotype, situational, social distance, opinion, and self-rating. The most widely used type is "opinion," which asks the examinee to agree or disagree with each item in a list of statements believed by the examiner to represent an attitude or various attitudes (Jackson and Messick, 1967). While a number of standardized scales have been developed, one is not available regarding attitudes toward interprofessional education and practice.

Two related assumptions were important. First, if attitudes result from the impact of the environment, it was reasonable to suggest that participation in an interprofessional course constituted an environmental impact. Second, it was reasonable to assume that attitudes can be measured by means of a questionnaire.

Three research questions were developed using a method for classifying types of information collected in survey research. In his 1978 book, Mail and Telephone Surveys, Dillman suggested that questions can be classified as

requesting one or more of these types of information:

1. Beliefs are an assessment of what a person thinks is true or false or what the person thinks exists or does not exist. Beliefs are comparable to awareness.
2. Attitudes are evaluative in nature and reflect respondents' views about the desirability of something. Attitude questions use words such as favor versus oppose, prefer versus not prefer, good versus bad, and desirable versus undesirable.
3. Behavior questions concern a respondent's actions or practice. They are a self-report of what a person did, is doing, or plans to do in the future.
4. Attribute questions deal with personal or demographic characteristics. Attribute information is usually collected to explore how belief, attitude, and behavior information differs for persons with various attributes (p. 80).

The items contained in the various sections of the questionnaire were developed to explore the following research questions:

1. What is the influence of participation in inter-professional courses upon the beliefs of professionals regarding interprofessional education and practice?
2. What is the influence of participation in inter-professional courses upon the attitudes of professionals toward interprofessional education and practice?
3. What is the influence of participation in inter-professional courses upon the behavior of professionals with regard to interprofessional education and practice?

It was intended that questionnaire items be linked to the stated objectives of the various courses facilitated by the Commission. An analysis of the syllabi of the courses revealed five objectives common to the four courses. The



course objectives remained relatively constant during the study period, 1975-81, for the eighteen sessions of the four courses. It was expected that each course would develop in students:

1. An awareness of current social values and ethical issues questions;
2. An understanding of the response of one's own profession to current social values and ethical issues questions;
3. An appreciation of the response of other professions to current social values and ethical issues questions;
4. An understanding that client problems often consist of a configuration of multiple attributes and problems;
5. An exposure to professional team process for client problem resolution.

Individual questionnaire items were generated to assess the actualization of the objectives by practicing professionals. Input, in the form of reaction to items as well as suggestions for additional items, was solicited from course faculty, Commission board members, and Commission staff. The questionnaire was pilot tested among a small group of graduate students and practitioners who were asked to assess the instrument for clarity, item congruence, and time required.

The population consisted of those persons who took at least one Commission course during the period 1975-76 to 1980-81 and have been graduated at least one year from the professional program in which they were enrolled. The graduation criterion was used to allow course participants an opportunity to become practicing professionals by the time the survey was sent out. The population was identified from

Commission course rosters cross-checked with appropriate graduation lists. The population of course participants numbered approximately 400.

The selection of a comparison group was accomplished by selecting from each quarter's commencement list, by profession, a number of graduates equivalent to the number of course participants graduating that quarter. For example, if four course participants received M.S.W.'s in Spring 1980, then four non-participating M.S.W. graduates were chosen by means of a systematic sample for inclusion in the comparison group.

The population consisted of course participants from 1975-76 through 1980-81 who had graduated by Autumn Quarter, 1981, and a matched comparison group of non-participant graduates. The sample consisted of persons from the population for whom current addresses were available. Sources for addresses were the OSU Alumni Association and the registrar's offices of the theological schools. The population of graduates represents approximately 56% of total course participants. The final Course Participant group and Non-participant group represent almost 90% (422 out of 451) of the graduates.

The questionnaires were sent by first class mail to the sample. Also enclosed was a postage paid return envelope. Approximately three weeks after the first mailing, a second mailing, including another questionnaire and return envelope, was sent to all who did not respond to the first mailing. The total return rate was 47%, 50% for Course Participants and 45% for Non-participants.

The quantitative analysis occurred in two parts. The first procedure was descriptive. Utilizing formats available in the Statistical Package for the Social Sciences (SPSS), frequency counts, cross tabulations, and distribution analyses were produced. Observations were possible regarding professionals as one aggregate group and as two study groups-- Course Participants and Non-participants.

The second procedure was explanatory, relying on interpretation of the correlation coefficients (Pearson's  $r$ ) for each of the independent variables.

It was expected that the majority of the correlation coefficients for this study would be positive, showing some relationship between course participation and responses favorable to interprofessional activities. However, it was also expected that the coefficients would be of low magnitude, or in other words, showing only small differences between Course Participants and Non-participants. Small differences were expected because interprofessional interaction is basically an intrinsically appealing concept, and even Non-participants should favor the concept to some extent. The intention for using correlations as a data analysis technique was to explore whether a consistent pattern of positive coefficients was exhibited. If Course Participants consistently respond differently than Non-participants, even if in small magnitudes, then there would be indicators of the nature of the underlying relationships between variables as suggested by the study's research questions.

The primary independent variable was participation in a Commission-facilitated interprofessional course. Related independent variables were: participation in any interdisciplinary or interprofessional course; participation in a non-Commission interdisciplinary course; and hours of involvement per week in interprofessional interaction. The dependent variables were: beliefs of professionals regarding interprofessional education and practice; attitudes of professionals toward interprofessional education and practice; and behavior of professionals with regard to interprofessional education and practice.

### Results

Beliefs. The majority of respondents indicated a high level of awareness regarding interprofessional concepts. Most respondents agreed that seven of eight issues suggested were appropriate for interprofessional attention. Those included: "life and death issues," "professional roles," "quality of client care," "professional ethics," "costs of human services," "privacy and informed consent," and "substance abuse." Only one issue, "licensure, certification and recertification (with regard to individual professions)," was not generally considered to be a topic which required interprofessional attention. Percent responses for some of the "Beliefs" items are summarized in Table 1.

Attitudes. Twelve statements comprised the "Attitudes" section of the questionnaire. Respondents were asked to state their opinions by marking items from "strongly disagree" to

TABLE 1

ISSUES WHICH RESPONDENTS SUGGEST AS APPROPRIATE FOR AN INTERPROFESSIONAL APPROACH

Issues		Strongly Agree %	Agree %	Undecided %	Disagree %	Strongly Disagree %
1. Life and death issues: abortion, euthanasia, wrongful birth	* **	71.2 57.1	21.1 30.4	2.0 4.2	3.5 4.8	1.0 1.8
2. Professional ethics	* **	39.4 36.3	41.9 45.8	7.1 6.0	9.6 10.7	1.5 -
3. Costs of human services	* **	34.8 34.5	44.9 42.9	12.6 14.9	6.1 5.4	0.5 0.6
4. Licensure, certification, recertification	* **	11.1 16.7	28.3 22.6	24.7 25.6	26.3 24.4	8.1 10.1
5. Privacy and informed consent	* **	40.4 33.9	43.4 48.2	11.1 9.5	4.0 6.5	1.0 0.6
6. Understanding role of various professions	* **	63.1 57.7	31.8 33.9	4.0 4.8	1.0 2.4	- 0.6
7. Quality of client care	* **	59.1 52.4	29.8 38.7	7.6 3.6	2.5 4.2	1.0 0.6
8. Substance abuse	* **	43.4 41.7	39.4 34.5	13.1 15.5	3.5 4.2	0.5 3.0

\* Course Participants (N = 198)

\*\* Non-participants (N = 168)

"strongly agree" regarding descriptive statements. For example, participants were asked to what extent they agreed that "interprofessional cooperation can significantly promote communication and understanding among professions."

Responses revealed that professionals assign high value to interprofessional ideals. On nine of the twelve statements, at least 80% of the responses were either "strongly agree" or "agree." While both Course Participants and Non-participants showed strong support for interprofessional values, Course Participants had a larger percentage of responses under "strongly agree" and "agree" than did Non-participants.

Course Participants showed strong support for the concepts of: 1) an interprofessional approach, 2) interprofessional courses, 3) involvement of professional associations, 4) the appropriateness of dealing with ethics, 5) interprofessional clinical education, and 6) interprofessional continuing education. In addition, Course Participants reported that their professional coursework provided sufficient insight regarding the values perspectives of other professions. Participants, however, would have liked additional interprofessional course emphasis. "Attitude" responses are recorded in Table 2.

Correlation coefficients for eleven of the twelve statements indicated a statistical difference between the responses of the two groups. Relatively strong correlation was suggested between course participation and responses regarding interprofessional coursework, interprofessional involvement of professional associations, an interprofessional approach to ethics, and interprofessional continuing education.

TABLE 2

ATTITUDE REGARDING INTERPROFESSIONAL EDUCATION AND PRACTICE

Attitude Statements		Strongly Agree %	Agree %	Undecided %	Disagree %	Strongly Disagree %
1. An interprofessional approach is required today because issues are more complex.	* **	37.4 29.4	54.0 56.5	5.1 4.8	3.5 6.0	- 1.8
2. Courses in interprofessional awareness should have high priority in professional programs.	* **	39.9 23.8	44.9 53.6	10.1 13.1	5.1 8.9	- -
3. My professional coursework provided sufficient insight regarding values perspectives of other professions.	* **	4.0 4.2	32.8 16.1	13.6 13.7	41.4 50.0	8.1 15.5
4. Changing societal values do not significantly influence the role of the professions in society.	* **	1.5 1.2	3.0 3.0	7.1 7.7	48.0 47.0	40.4 40.5
5. An interprofessional approach does not necessarily improve client care.	* **	4.5 3.6	32.8 39.9	12.6 13.7	34.3 32.1	15.7 10.0
6. Professional associations should take a leading role in promoting interprofessional activities.	* **	37.9 22.0	55.1 62.5	4.0 10.7	2.5 3.0	0.5 0.6
7. Professional schools should not attempt to deal with ethics or values issues of the profession.	* **	0.5 -	- 1.8	1.5 1.8	22.7 34.5	5.3 61.3
8. The clinical component of professional school curricula should include interprofessional interaction.	* **	50.0 39.3	48.0 55.4	1.5 1.2	0.5 3.0	- 0.6
9. Interprofessional cooperation in actual practice is an unrealistic goal.	* **	1.0 0.6	2.0 1.2	6.6 13.1	54.5 56.5	35.9 27.4
10. Interprofessional cooperation can significantly promote communication and understanding among professions.	* **	46.5 43.5	48.5 52.4	2.5 2.4	1.0 0.6	1.5 0.6
11. Most professionals need further training in group dynamics before interprofessional involvement.	* **	15.7 11.3	37.9 39.3	21.7 28.6	22.7 19.6	1.5 0.6
12. Professional continuing education programs should include aspects of interprofessional interaction.	* **	36.4 22.0	48.6 66.1	3.5 7.7	1.0 3.6	0.5 -

\* Course Participants (N = 198)

\*\* Non-participants (N = 168)

Behavior. Approximately 70% of the respondents were able to list an interprofessional activity in which they had been a participant. Most of the activities were one of two types, either an ongoing client/patient team situation or a one-time issue-specific situation. Some examples of "ongoing client/patient team situations" were provided by respondents:

I am currently involved with developing an interdisciplinary team directly connected to a patient teaching program on home maintenance care. I am the core member of the team. Patients receive excellent teaching. I feel good about this. (Nursing)

The Teen Pregnancy Task Force, a committee established to deal with the problem of teenage pregnancy, has provided a good exchange of information and feelings and a good means of coordinating services in the community. (Social Work)

My chaplain ministry in a hospital was aided by talks and presentations by doctors, nurses, and hospital administrators. . . . (Theology)

. . . we have a Juvenile Council. A juvenile who has committed an offense must appear before the council with his/her parents. The council consists of a chaplain, social worker, school officials, attorney, law enforcement officials, and community representatives. The purpose is to recommend to the Commander the most effective way to handle the case. It has been fairly effective. Second offense rate is very low. (Law)

Respondents also provided examples of "issue-specific situations," including the following:

I helped a young child who was injured. . . to achieve a good recovery over a long time and fit into school, home, church, and social activities. It is satisfying to see a child's confidence in his own recovery grow as he is involved in daily activities and events he didn't dream possible. (Allied Medical Professions)

I participated in a Stroke Rehabilitation Patient Education Program, a total job rehabilitation program in which clients received quality care. (Education)

A Community problem occurred when drugs, purchased at school, showed up at a church youth outing. Law enforcement was alerted. A local abuse center worked with both schools and church in a preventative program with grass roots parental support and participation. (Theology)

A typical example is helping a family as they try to decide whether to discontinue mechanical ventilation on a terminal patient. Working with clergy to help that family arrive at a decision which will not make them feel guilty is a rewarding experience. Also involved are nurses, social workers, etc. I feel that this type of decision requires input from the several professions because too often the family views the doctor's advice as lacking a human element. (Medicine)

The survey indicated that those who had participated in Commission courses were more likely to list specific examples of interprofessional activity than were Non-participants. Another difference was in the average weekly amount of interprofessional activity listed by participants in both groups. In that area, 77% of Course Participants (compared to 70% of Non-participants) listed some regular interprofessional activity.

The greatest difference between the two groups occurred in responses to the statement: "I have participated in interprofessional practice." Of Course Participants, 74% reported participation, while 58% of Non-participants reported participation. That difference was statistically significant, suggesting a strong relationship between participation in Commission courses and the amount of subsequent interprofessional activity in practice. Correlation was also suggested regarding membership in professional associations; i.e., course participants reported a higher level of such membership. There were no differences between the Course Participants and

Non-participants regarding the amount of reading in professional journals or the listing of professionals with whom respondents interact. Percentage responses for selected "Behavior" items are presented in Tables 3, 4, 5, and 6.

TABLE 3

ACTIVITIES IN WHICH RESPONDENTS HAD PARTICIPATED

Respondent Group	Did not list any activities		One activity described		Two activities described	
	Freq.	%	Freq.	%	Freq.	%
Course Participants	53	26.8	128	64.6	17	8.6
Non-participants	54	32.2	103	61.3	11	6.5

TABLE 4

CATEGORIES OF ACTIVITIES IN WHICH RESPONDENTS PARTICIPATED

Types of Activities	Course Participants		Non-participants	
	Freq.	%	Freq.	%
1. Ongoing client/patient team situations	58	40.0	30	26.3
2. Issue-specific situations	44	30.3	36	31.6
3. Experience during professional education	20	13.8	10	8.8
4. Workshops, meetings, conferences	5	3.4	16	14.0
5. Community involvement	7	4.8	8	7.0
6. Continuing education situations	5	3.4	4	3.5
7. Professional association activities	2	1.4	7	6.1
8. Teaching and research situations	1	.7	2	1.8
9. Social relationships; acquaintances	2	1.4	-	-
10. Situations prompted by mutual respect	1	.7	-	-

TABLE 5

HOURS SPENT IN INTERPROFESSIONAL ACTIVITIES  
IN A TYPICAL WORK WEEK

Respondent Group	Not at all		Occa- sion- ally		1 - 3 hours a week		4 - 6 hours a week		7 or more hours a week	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Course Participants	44	22.8	3	1.6	75	38.9	25	13.0	46	23.8
Non- participants	49	29.7	6	3.6	67	40.6	15	9.1	28	17.0

TABLE 6

INTRA AND INTERPROFESSIONAL INVOLVEMENT

	Course Participants		Non- participants	
	Yes	No	Yes	No
1. I am aware of at least one interprofessional team.	67.9%	32.1%	60.2%	39.8%
2. I have participated in interprofessional practice.	73.7%	26.3%	57.3%	42.5%
3. I read at least one journal from my own profession.	95.4%	4.6%	95.7%	4.3%
4. I read at least one journal from outside my own profession.	38.5%	61.5%	38.9%	61.1%
5. I am involved on a board or committee in my community with persons from outside my profession.	47.4%	52.6%	41.7%	57.1%

Attributes: Attribute variables included age, experience, degree held, and other personal information. For none of the "Attribute" variables was there systematic variance between Course Participants and Non-participants. Respondents were mostly in the 25-34 age category. Most had 3 to 4 years of professional experience. The most frequently reported degree held was Master's degree, followed by J.D. and B.A. or B.S. Most respondents did not have prior professional work experience. Approximately 45% held memberships in professional associations.

### Discussion

This study presents an interprofessional approach as a concept. Three stages can be proposed to identify the process by which a professional adopts an interprofessional approach. These stages are awareness, acceptance, and implementation. The three stages correspond to three types of information collected by the study: beliefs, attitudes, and behaviors. The three types of information are the operational components of the three stages of the interprofessional approach.

The first stage is awareness. At stage one the professional is exposed to the concept of an interprofessional approach, and has some idea how interprofessional interaction would affect certain situations. The awareness stage corresponds with beliefs.

At the second stage of the interprofessional approach, corresponding to the attitudes section of the questionnaire,

the professional accepts the benefits inherent in inter-professional cooperation. A stage two professional has formed the attitude that there are distinguishable advantages to an interprofessional approach for certain categories of client/patient situations.

Stage three of this framework of an interprofessional approach involves implementation or utilization of inter-professional principles. The corresponding operational component of implementation is behavior. A stage three professional combines awareness, acceptance, and implementation.

Stage One. The first section of the questionnaire, which dealt with "Beliefs," corresponded to stage one of the framework just introduced. An analysis of the findings for this section revealed that at stage one there were only very slight differences between Course Participants and Non-participants. The questionnaire items in this section did very little to discriminate between the two groups of professionals.

However, general observations at stage one of the interprofessional approach are possible from the findings of the "Belief" section. It can be stated that most of the professionals surveyed have an awareness of or some exposure to interprofessional activities. Over 90% of all of the respondents could agree on interprofessional issues. While the interprofessional courses may have contributed to the awareness of Course Participants, a similar level of awareness was achieved by Non-participants exclusive of Commission courses.

One final comment regarding beliefs/awareness involves responses to "Licensure, certification, recertification." This was the only issue for which there was not strong agreement regarding an interprofessional approach. This result was not suggested in the literature and may be an appropriate item of discussion for course faculty.

Stage Two. If stage one of the interprofessional approach corresponds to awareness of the notion, then stage two of the framework implies acceptance. A professional exhibiting stage two characteristics would choose an interprofessional approach when a choice was presented. This level of involvement is indicative of the "Attitudes" items on the questionnaire. Those items forced respondents to demonstrate their preferences.

Both Course Participants and Non-participants reported favorable attitudes toward the interprofessional statements. For the majority of the twelve statements, 80 to 90% of the responses were in support of an interprofessional approach. This overwhelming general support again demonstrates the intrinsic appeal of the concept.

At stage two, however, the degree of support from the two groups of respondents was different. Course Participants more strongly supported the concept. A small difference, statistically significant, was demonstrated on nine of the twelve attitude statements.

It appears that participation in a Commission course enables a professional to adopt a stronger degree of interprofessional commitment. Participation in any interdisciplinary



course, excluding the Commission courses, also seems to generate stronger acceptance.

Stage Three. The three stages of the framework are progressive, starting with awareness, moving to acceptance or commitment, and concluding with implementation. At the third stage, implementation, larger differences appeared between the responses of Course Participants and Non-participants. Although many non-participants had implemented interprofessional activities, more Course Participants had done so.

Responses to two items in Part I of the questionnaire are indicative of the difference between stages of involvement, and between the two groups of respondents. The first question asked if respondents were aware of an interprofessional team. Course Participants' rate of awareness was 68%, and Non-participants' rate was 60%. The second question asked respondents to indicate whether they had participated in interprofessional practice. The responses were 74% and 57% for the two groups. This difference between the groups was reflected in the correlation coefficients across each of the four independent variables (.15, .17, .11, .50).

The stage three involvement of Course Participants was evident across several dimensions. Course Participants listed more situations that promote interprofessional involvement. They also listed more examples of activities in which they had participated. Course Participants' activities were more frequently institutionalized into their professional practice, while Non-participants engaged more frequently in issue-specific, one-time situations.

It is possible to generalize regarding situations where interprofessional activity takes place. The professional setting is a determining factor. Professionals working as part of some organization, agency, or institution as opposed to those in private practice more frequently provided examples of interprofessional practice. Certain issues more frequently were mentioned. Those issues generally involved life-threatening illness, radical professional treatments, threats to traditional family structures and professional treatments around which there are no universally-accepted ethical positions. Medical issues and the physician were involved in a majority of the examples. Medical professionals led the list of other professions with which respondents were involved. Involvement in a professional association increased the frequency of interprofessional involvement.

Nearly 25% of Non-participants reported taking an interdisciplinary course other than a Commission course; however, they provided no descriptive information about those courses. This group of Non-participants reported more interprofessional activity than the rest of the Non-participants, but not as much as Course Participants.

The sample also responded regarding: membership in professional associations; reading professional journals; and involvement on a board or committee in the community. While Course Participants did show a higher level of involvement in professional associations, they were not distinguished from Non-participants on the other two items.

Attributes. Responses to the "Attributes" items supported the comparability of the two groups of respondents. Information about age, years of professional practice, highest degree attained, prior work experience, and present profession is useful as a part of a general data base on professionals. Sample selection methods dictated that respondents would be relatively young and would have only a few years of professional experience. While results cannot be generalized to all professionals, they do strengthen the survey design regarding new professionals in practice.

### Conclusions

The statistical procedure used in the data analysis was designed to measure the degree or strength of relationship between two variables. The intent was to assess whether a dependent variable, such as interprofessional behavior, could be predicted based on knowledge of an independent variable, such as previous participation in an interprofessional course.

Three research questions were developed for this study. The first research question was, "What is the influence of participation in interprofessional courses upon the beliefs of professionals regarding interprofessional education and practice?" The results of this study provide no basis for suggesting that course participation has any influence, beyond an almost imperceptibly slight one, on subsequent beliefs. At the level of beliefs, or awareness, regarding interprofessional activities, both Course Participants and

Non-participants demonstrated a high level of agreement on potential interprofessional issues, obstacles to interprofessional activities, and situations which promote interprofessional activities.

The second research question was, "What is the influence of participation in interprofessional courses upon the attitudes of professionals toward interprofessional education and practice?" A relationship was suggested between course participation and subsequent attitudes. Course Participants demonstrated stronger agreement with a series of attitude statements regarding interprofessional education and practice. Statistically, the suggested influence was small, with coefficients in the .12 to .20 range (reflecting 1% to 4% of the variance). But the coefficients were consistent in sign and pattern. Course Participants consistently had a 10% higher level of Strongly Agree responses.

The third research question was, "What is the influence of participation in interprofessional courses upon the behavior of professionals with regard to interprofessional education and practice?" Course participation seemed related to greater interprofessional behavior. Across the primary independent variable and three secondary independent variables, a pattern of small differences was shown to be statistically significant between Course Participants and Non-participants. Course Participants were more frequently able to describe an interprofessional activity in which they had participated and more frequently responded that they had participated in interprofessional practice.

There are two features which restrict these conclusions. The first restriction is dictated by the size of the correlation coefficients. While demonstrating a pattern, the coefficients were very small. Any influence attributed to course participation represents a very small percentage of all factors operating to influence professional behavior.

The second restriction has been alluded to several times, and involves potential weaknesses in the study itself. There was unavoidable self-selection in the sample. There were also differences in numbers among the professions based on the courses' enrollment history. Several weaker questionnaire items survived the pilot study.

Despite the few weaknesses cited above, the findings and conclusions presented within this study represent an important addition to the data base of interprofessional education and practice. Interprofessional education may make a difference, even if only a small one. This study now offers tentative validation of pre-professional educational courses as mechanisms for promoting interprofessional practice.

### Recommendations

This study can be viewed as an initial step in assessing the impact of an innovative educational endeavor. Further research is indicated in a number of areas.

First, it would be useful to investigate the influences of the courses on a course by course basis. If the courses are impactful, further research could identify what specifically about the courses accounts for that. Further research is

necessary about the various components of the courses, and the components' respective impact. Differences in impact occur among the four courses. Certain of the courses may be more influential. Certain courses may emphasize more stage three-type experiences, and should perhaps be emphasized. Additional research on a course-specific basis is possible using the data base from this study. Similarly, comparisons are possible between Course Participants who took one course and those who took more than one.

A profession by profession analysis is possible and necessary. This type of analysis is currently underway by the Commission, but may be limited by the differences in sample sizes among the professions. Research will be necessary into possible status differences among the professions, and ways those differences impact on both course experience and cooperation in practice.

Another recommendation for further research is to avoid the self-selection threat and the ex post facto nature of the present study. "Pre-test" measurements of students taking courses and similar professional students not taking inter-professional courses can help isolate the effects of the course experiences. Attitude measures before the course, immediately after the course, and then some time later may assist in making more definitive observations of course effects.

A three-stage framework describing the interprofessional approach was suggested. The three stages were awareness, acceptance, and implementation. A fourth stage may also exist--research and development. A professional who is

pursuing research on the notion of an interprofessional approach, or is teaching the notion to prospective professionals, is a person who has gone beyond stage three. The stage four professional seeks to add new knowledge or new understanding to the notion of an interprofessional approach.

Ultimately, this study rested on the beliefs, attitudes, and behaviors of professionals in practice. Further study of professionals in practice is appropriate. Practice setting, length of service, community mores--all probably influence the amount of interprofessional activity. If interprofessional cooperation is indeed a worthwhile goal, then these additional research areas must be pursued.

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# SUMMARY OF CORRELATION COEFFICIENTS\*

Dependent Variables	Independent Variables			
	Commission interprof. course	Any interdisc./ interprof. course	Interdisc. course other than Comm.	# of hours of interprof. activity per week
<b>BELIEFS</b>				
<u>Issues:</u>				
1. Life and death issues: abortion, euthanasia, wrongful birth.	-0.13385	0.15600	0.13461	0.14402
2. Professional ethics.	-0.00818	0.02600	0.07328	-0.17964
3. Costs of human services.	-0.01369	0.00864	0.01053	-0.09926
4. Licensure, certification, recertification.	-0.01956	0.01010	0.05361	-0.23347
5. Privacy and informed consent.	-0.04356	0.07083	0.07732	-0.09942
6. Understanding role of various professions.	-0.08547	0.11868	0.12291	-0.13071
7. Quality of client/care.	-0.04134	0.05761	0.07344	-0.23975
8. Substance abuse.	-0.05431	0.08956	0.09611	-0.07322

# Obstacles:

1. High degree of specialization.	-0.04003	0.06108	0.07225	-0.06028
2. Lack of exposure to the viewpoints of others.	0.00910	0.02477	0.08397	0.03962
3. Lack of opportunities for interprofessional exchange of information.	0.02484	0.00268	0.05598	0.15182
4. Time demands.	0.12089	-0.12226	0.07538	0.03480
5. Professional jealousies or misunderstandings.	-0.05607	0.06295	0.04522	-0.04133
6. Difficulty in knowing how to proceed.	-0.00316	0.02921	0.05463	0.06787
7. Differences in problem-solving approaches.	-0.07733	0.01483	-0.09945	-0.04511
8. Lack of knowledge of effective use of groups.	-0.04374	0.09098	0.14901	0.00734
9. Suspicion that other professions might dominate.	0.00571	0.05135	0.12848	-0.07461
10. Apprehension that other professions might not value my profession's contribution.	0.03922	0.02472	0.13226	-0.01726

### Enablers:

1. Interprofessionally-oriented continuing education.	-0.08268	0.09559	0.10959	0.00950
2. Topic-related interprofessional newsletter.	-0.01303	-0.00477	-0.01347	0.05195
3. Interprofessional learning experiences during professional training.	-0.14141	-0.14454	0.08492	-0.01198
4. Economic subsidies or incentives for inter-professional activities.	-0.12019	0.08290	0.00582	0.03549
5. Periodic recertification with an interprofessional component.	-0.12099	0.09972	0.04681	-0.06976
6. Increased public awareness of existing inter-professional cooperation	-0.05963	0.06294	0.06227	-0.03051
7. Peer acceptance among professionals regarding interprofessional cooperation.	-0.05981	0.00919	-0.07645	-0.00495
8. Confidence among professional in group interaction skills.	-0.13479	0.10698	0.02158	-0.06145
9. Encouragement and support from administrative personnel.	0.01242	0.01140	0.05902	-0.11704

## ATTITUDES

1. An interprofessional approach is required today because issues are complex.	-0.114324	0.15708	0.14372	-0.09518
2. Courses in interprofessional awareness should have high priority.	-0.16860	0.20992	0.19197	-0.12655
3. My professional coursework provided sufficient insight regarding other professions.	-0.17453	0.12741	-0.01094	-0.14751
4. Changing societal values do not influence the role of professions in society.	-0.00104	0.02239	0.04492	0.01574
5. An interprofessional approach does not necessarily lead to improved client care.	0.06792	-0.21670	-0.18048	0.09969
6. Professional associations should take a leading role in promoting inter-professional activities.	-0.16607	0.15996	0.09736	-0.14442
7. Professional school should not attempt to deal with ethics or values.	0.15761	-0.18992	-0.16017	-0.06813
8. The clinical component of professional school should provide for interprofessional interaction.	-0.13400	0.16051	0.12372	-0.11447
9. Interprofessional cooperation in actual practice is an unrealistic goal.	0.06378	-0.12187	-0.16776	0.16900



# ATTITUDES continued

10. Interprofessional cooperation can significantly promote communication and understanding among the professions.	-0.00143	0.02512	0.08051	-0.04506
11. Most professionals need further training in group dynamics before getting involved with inter-professional teamwork.	-0.01419	0.07919	0.17651	-0.02148
12. Professional continuing education should include aspects of inter-professional interaction.	-0.16947	0.20198	0.17759	-0.08174

## BEHAVIOR

1. Aware of at least one inter-professiona team that works together regularly.	-0.04826	0.03238	-0.03041	-0.40243
2. I have participated in interprofessional practice.	-0.15698	0.17749	0.11402	-0.50927
3. I read at least one journal from my own profession.	0.00465	-0.00229	-0.00042	-0.15245
4. I read at least one journal from outside my own profession.	0.00869	0.06680	0.17180	-0.16268
5. I am involved on a board or committee in my community with persons from outside my profession.	-0.03752	0.05131	0.04625	-0.05918

\*Levels of significance varied with the size of the correlation coefficient.

The following guidelines describe that variation:

<u>Correlation coefficient</u>	<u>Level of significance</u>
.05 - .07	.1
.08 - .10	.05
.11 and higher	.01